

# SHARP SERVICE MANUAL

CODE: 00ZEL2192G22E



# EL-2195L

## MODEL EL-2192GII

STANDARD FUNCTION		12 digits	1+(GT)																																						
DISPLAY SECTION	<p>1234567890.12 <math>\frac{M}{EG}</math></p> <table border="1"> <tr> <td>ELEMENT: LCD</td> <td colspan="2">PARTS NAME: LD-B3699A</td> </tr> <tr> <td>NUMERAL: 12 digits</td> <td>SYMBOL: 1 digit(s)</td> <td></td> </tr> <tr> <td> </td> <td> </td> <td></td> </tr> <tr> <td colspan="3">Name : TC83230-0203</td> </tr> <tr> <td colspan="3">Type : FLT</td> </tr> <tr> <td colspan="3">Pin : 80pins</td> </tr> <tr> <td>POWER SUPPLY</td> <td>AC: <input checked="" type="checkbox"/></td> <td>DC: <input type="checkbox"/></td> </tr> <tr> <td colspan="3">           • BATTERY TYPE <span style="float: right;">AC only</span>            • OPERATION TIME         </td> </tr> <tr> <td colspan="3"></td> </tr> <tr> <td colspan="3"></td> </tr> </table>			ELEMENT: LCD	PARTS NAME: LD-B3699A		NUMERAL: 12 digits	SYMBOL: 1 digit(s)					Name : TC83230-0203			Type : FLT			Pin : 80pins			POWER SUPPLY	AC: <input checked="" type="checkbox"/>	DC: <input type="checkbox"/>	• BATTERY TYPE <span style="float: right;">AC only</span> • OPERATION TIME																
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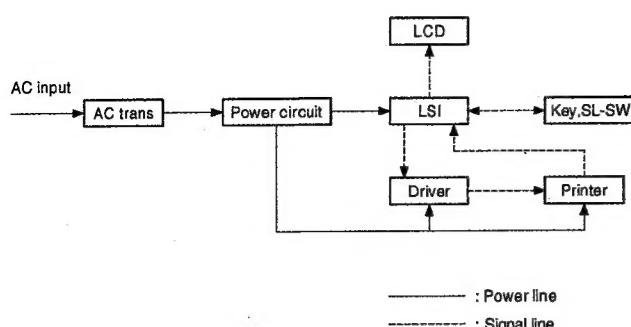
Parts marked with **▲** is important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

**SHARP CORPORATION**

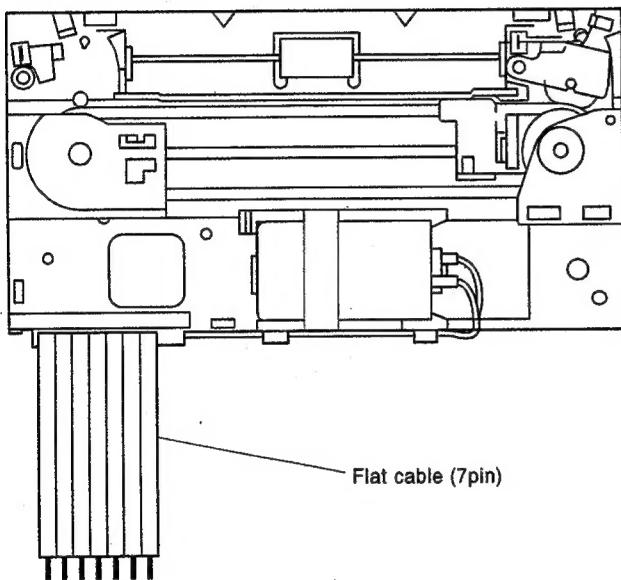
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## 1. Block diagram



## 2. Printer repair



The printer unit for servicing is delivered with the flat cable attached to it as shown in the above figure.

Since the EL-2195L mechanism differs from the conventional EL-2192G mechanism, the length of flat cable for connection between the printer unit and the PCB also differs. (The EL-2195L cable is longer.)

When, therefore, replacing the printer unit, remove the original flat cable, attach the EL-2195L flat cable (part code: 0EENB072540042), then replace the printer unit.

## 3. PTMFL87 PRINTER CAUTION NOTES

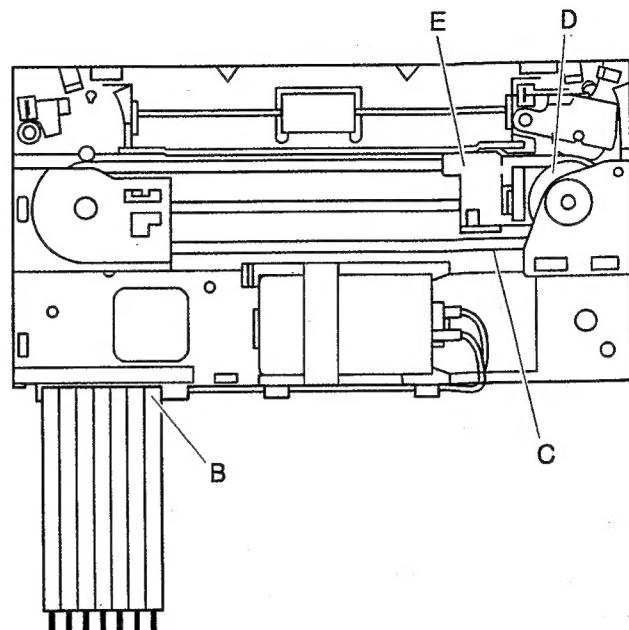
### 3-1. Servicing

The printer model PTMFL87 (Ki-OB107BCCZZ) used for the EL-2195L is available for service by an entire unit and therefore none of individual service parts is available for supply.

## 3-2. Cautions in Handling

### (1) How to Hold

- 1) Basically the printer should be held as shown by the arrows.



### (2) Portions on which Force Must Not Be Imposed

- 1) Repeated force must never be given to the soldered portion of the lead wire A. (It may be broken at the soldered place)
- 2) No force must be added to the soldered portion B of the electromagnetic clutch.
- 3) The character belt C must not be turned manually.
- 4) The pulley D must not be turned manually.
- 5) No force must be given to the hammer holder E.

### (3) Portions Which Must Not Be Touched

- 1) Do not touch the shaft with bare hands.
- 2) Do not touch the character belt with bare hands.

## 3-3. Detecting Mechanism

The detector is of mechanical contact type and consists of the code plate to output the character position detection signal to correspond to each character on the character belt, sensor gear unit to output the standard position signal, and fixed contact-piece unit.

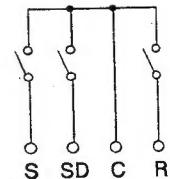
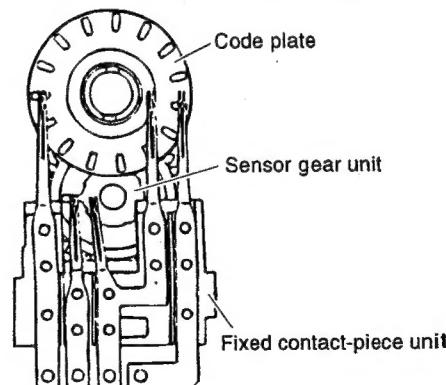


Fig. 1 Detecting Mechanism

Fig. 2 Equivalent Circuit

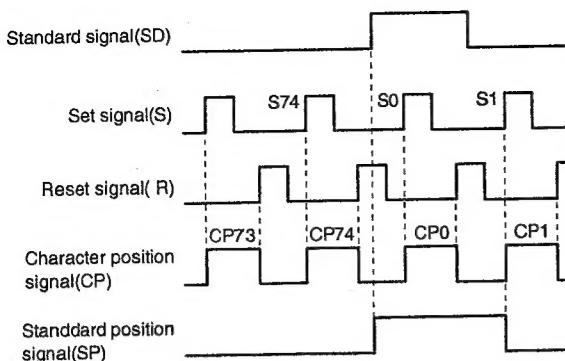


Fig. 3 Time Chart

The character position detecting signal (CP) is to be made by the user from the leading edges of the set signal and reset signal. This CP corresponds to the character on the character belt. The standard signal (SD) is a signal output once to the 75CP pulse, and the signal to be made by the user utilizing the leading edge of the second CP from the leading edge of this signal is the standard position signal (SP).

The reason why CP and SP are made using the raw signals output from the detector is that the effect of chattering is taken into consideration.

The following will explain the basic operation.

### 3-4. Operation Sequence

The basic operation is explained.

#### (1) Initialization

In order to make sure that the hammer holder is at its home position, i.e. the first column, print the space after power is turned on, and after the carry/return, do one-line paper feeding and set the hammer holder at its home position. This completes the initialization.

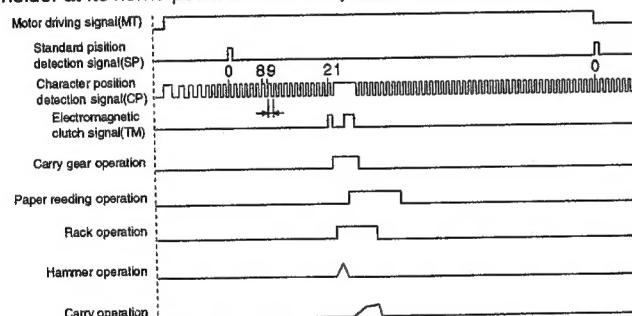


Fig. 4 Time Chart at Initialization

#### (2) 1-line printing operation

- 1) The printing operation is started by setting the motor driving signal (MT) ON.
- 2) Prior to 1-line printing, detect the standard position signal (SP) once and make the time from the leading edge of the character position detection signal CP8 to the leading edge of CP9 to and make it standard pulse width. (This to setting must be done at the initialization and prior to the 1-line printing. to is utilized for error detection.)
- 3) The character belt rotates until the desired CP pulse is detected.
- 4) If the desired CP pulse is detected, power is supplied to the electromagnetic clutch unit, the character belt is stopped, and printing operation/carry operation are done. In the meantime, the power to the electromagnetic unit is cut off. (For the detail, see 1.3.2. Printing/Carry Mechanism.)
- 5) After completion of the printing/carry operation, the character belt rotates again.

- 6) The operations 3) through 5) are repeated and 1-line printing is completed.
- 7) After the most significant digit printing, the electromagnetic clutch signal TM becomes OFF, and then between T3 and T4, paper feeding/column return operation is done by turning the electromagnetic clutch ON again.
- T3 = 80 to 200 $\mu$  sec
- T4 = (2.0 ~ 2.4)  $\times$  TCP
- 8) After paper feeding is started, it is completed when about 19CP is counted.
- 9) The motor driving signal is turned OFF after 19CP counting after the paper feeding is started. In case SP is not found within 19CP after the paper feeding is started, it is turned OFF after SP is detected.

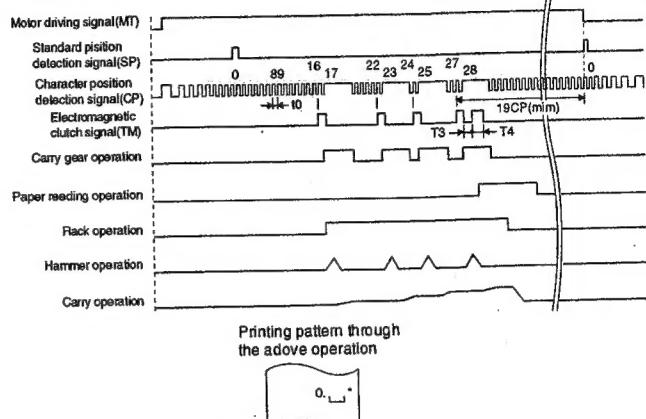


Fig. 5 Time Chart for 1-Line Printing (0. [ ] \* printing)

#### (3) Continuous printing operation

- 1) After the 1-line printing operation in (2), the motor driving signal (MT) is not turned OFF and the operations 2) through 8) are continuously done for the necessary number of columns while the motor is run.
- 2) After the most significant digit of the last line is printed, the operations 7), 8) and 9) in (2) are done and the motor is stopped.

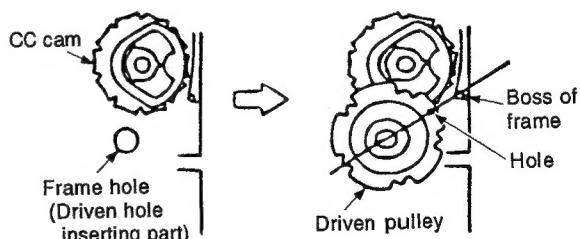
#### (4) Paper feeding operation

For the paper feeding operation, 1-line printing of space may be done in the same way as for the printing operation sequence.

### 3-5. Troubleshooting dislocated print belt

Install the character belt on the drive pulley and driven pulley. When installing the character belt, the following points must be considered.

- 1) If the driven pulley is removed and mismatched with the CC cam, it should be aligned as follows.

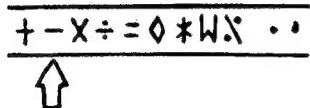
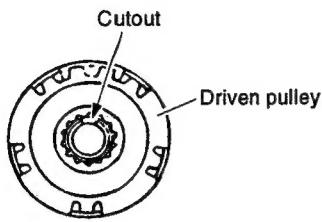


2) The character belt should be positioned as follows.

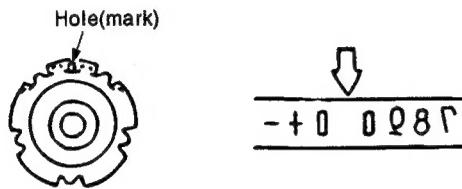
Manually turn the motor to the position where the SD pulse appears.

• A. Drive pulley side

Adjust the "—" of the character belt to the position of the hole (mark).  
("—" shown in the above arrangement of characters)

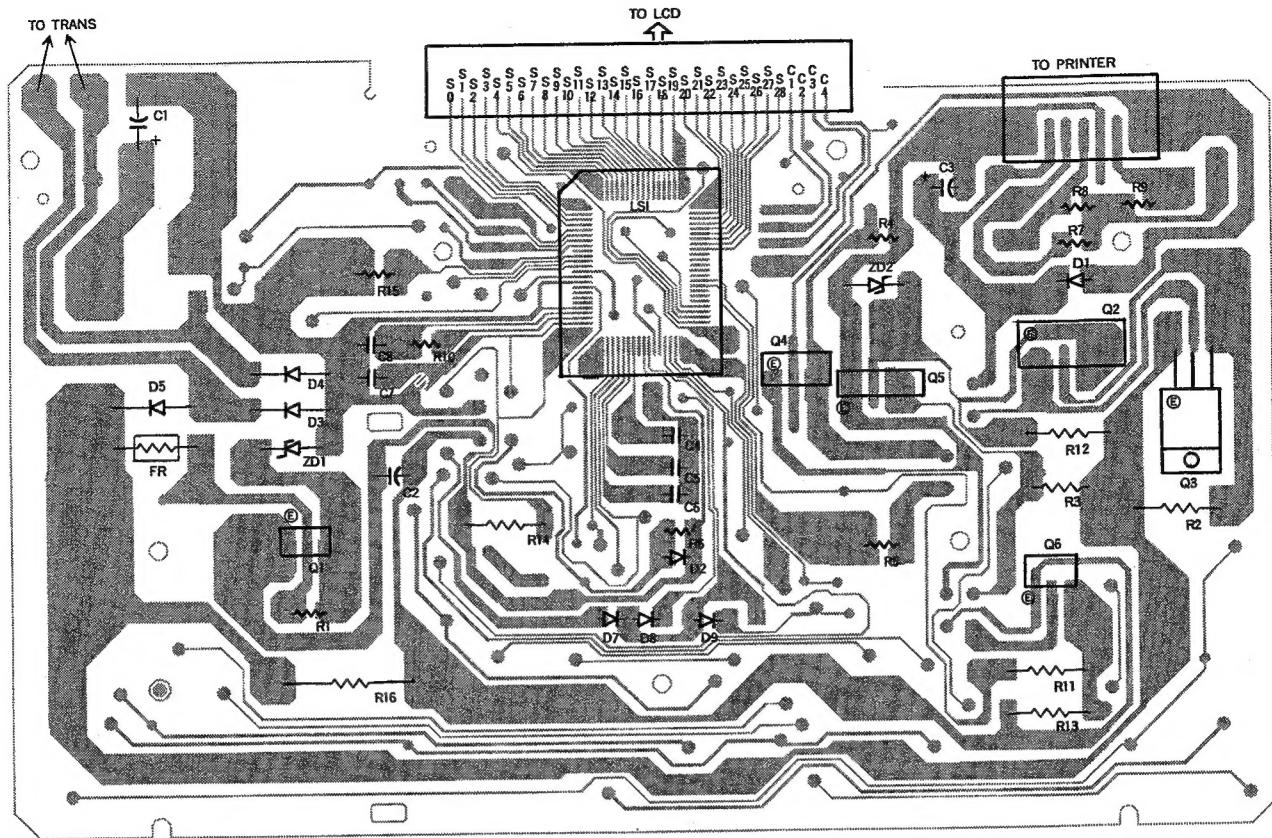


• B. Driven pulley side

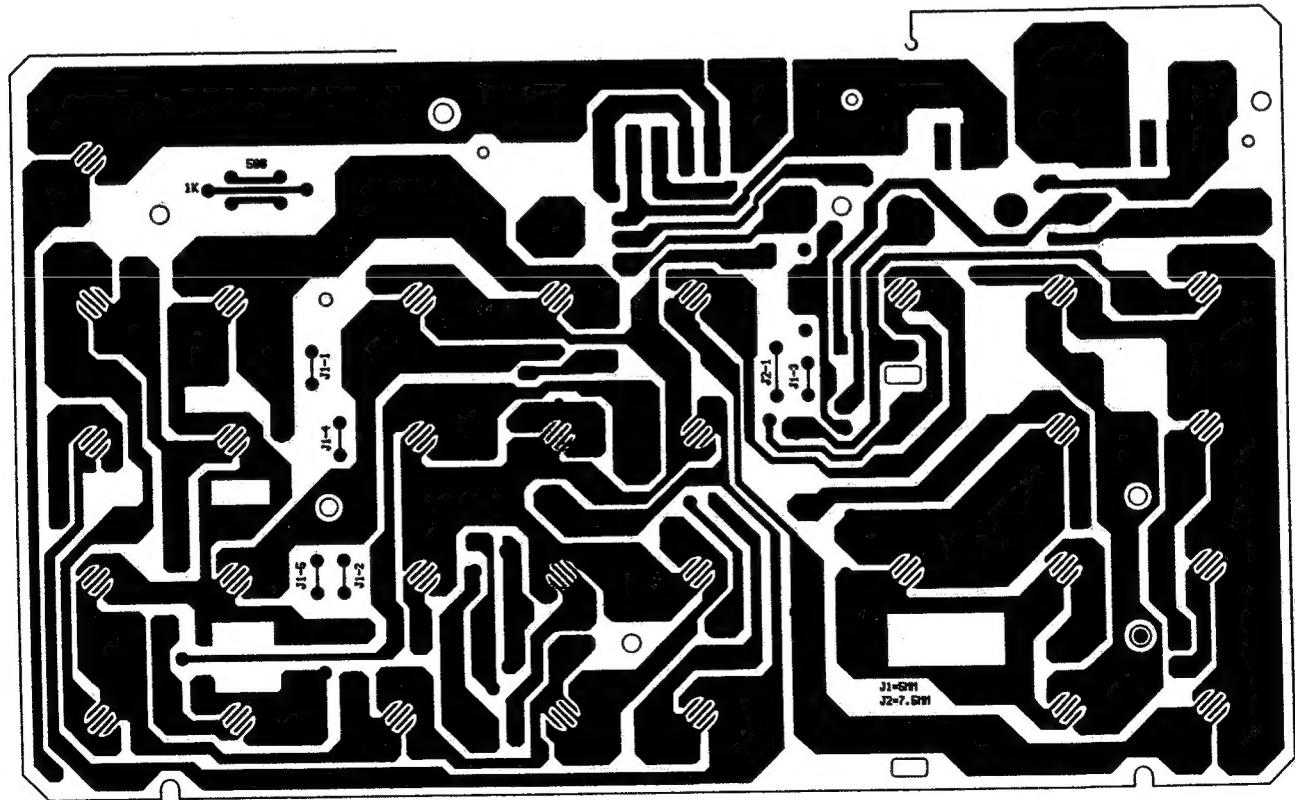


Adjust the center of the space of the character belt to the position of hole (mark).

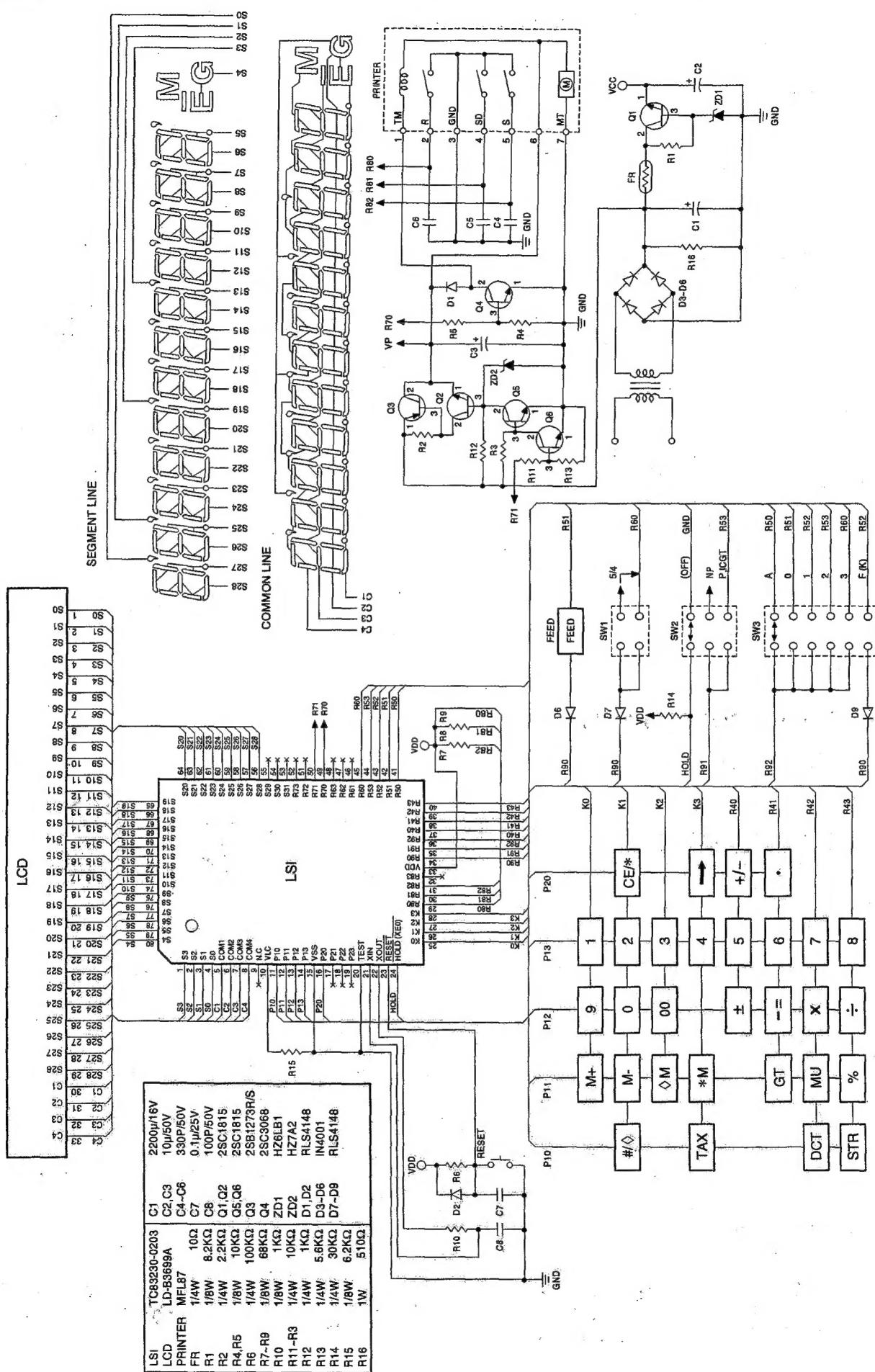
#### 4-1. Parts signal arrangement (Parts installing surface)



#### 4-2. Wiring pattern (Key side)



## 5. Circuit diagram



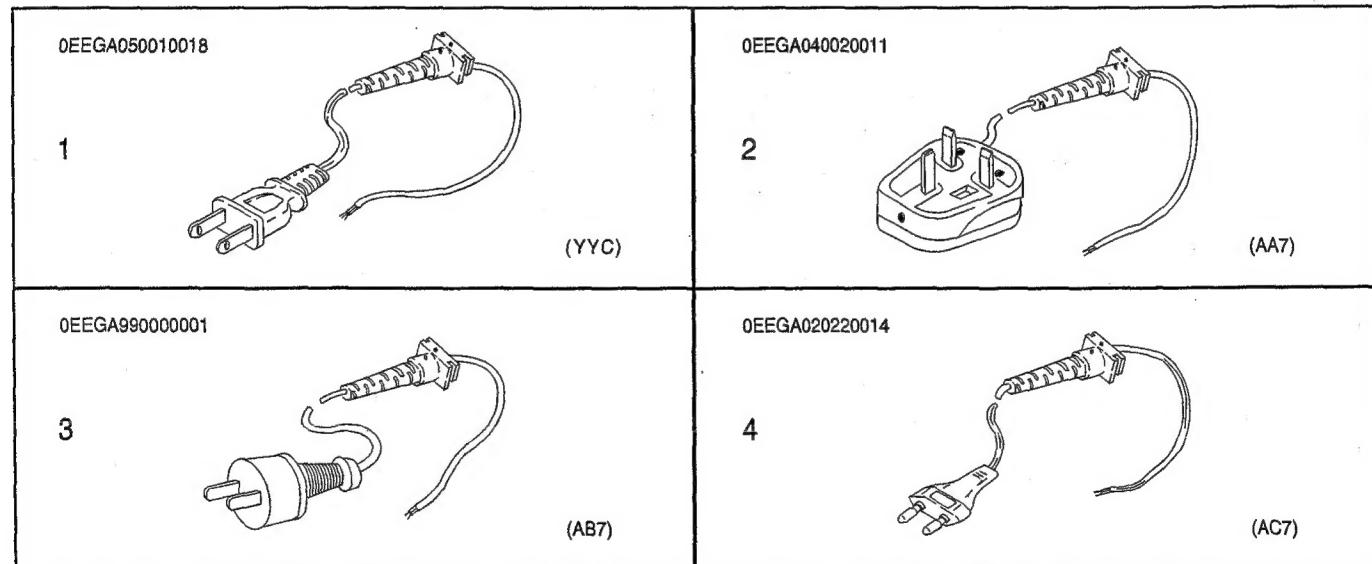
**List of destinations (Destinations are determined by the name plate voltage and the plug shape.)**

Destination	To identify destination		Major shipping country	Remarks
	Name plate voltage	Plug shape No.		
YYC	120V 60Hz	1	Canada	
AA7	220-230V 50Hz	2	U.Kingdom	
AB7	230-240V 50Hz	3	Austraria	
AC7	220-230V 50Hz	4	Germany	

**AC cord**

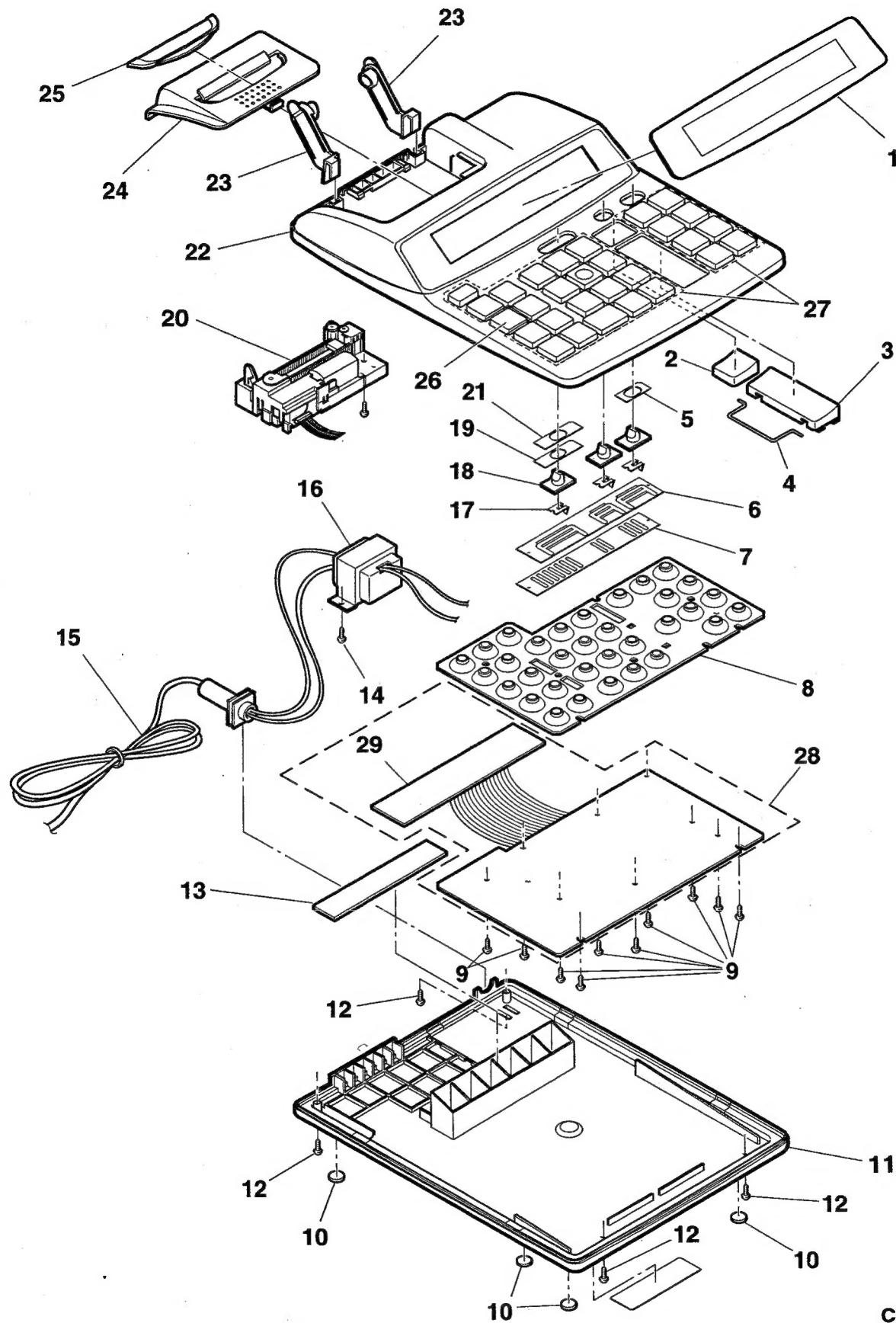
NO.	PARTS CODE	PRICE RANK	TYPE OF LEAD		DESCRIPTION	MODEL NAME	
			2 LEAD	3 LEAD		EL-2195L	EL-2192GII
1	0EEGA050010018	AS	F		AC cord YYC		○
2	0EEGA040020011	AZ	F		AC cord AA7	○	
3	0EEGA990000001	AT	F		AC cord AB7	○	
4	0EEGA020220014	AT	F		AC cord AC7		

**Plug shape**



## Parts list & Guide

### 1 Exteriors



CCPS0071

### 3 PWB unit

## 1 Exteriors

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION		EL-2195L	EL-2192GII
1	0EEFD2PD051020	A P		D	Display window		○	
	0EEFD2PD051011	A Q	N	D	Display window			○
2	0EEKB1PD056013	A D		C	Key top (=)		○	○
3	0EEKB1PD055017	A D		C	Key top (+=)		○	○
4	0EELC030004508	A D		C	Balance steel (for +key)		○	○
5	0EEEL6PD053009	A C		C	SL-SW cover S		○	○
6	0EEELDPD051008	A E		C	SW mylar		○	○
7	0EEELDPD051016	A D		C	SW spacer		○	○
8	0EELAPD0510007	A N		C	Rubber sheet		○	○
9	XUPSN20P06000	A A		C	Screw (2 X 6)	(for PWB)	○	○
10	0EELC110001408	A C		D	Rubber foot		○	○
11	0EEFABPD051026	A T		D	Lower case		○	
	0EEFABPD051018	A T		D	Lower case			○
12	XUPSN30P08000	A A		C	Screw (3 X 8)	(for cabinet)	○	○
13	0EEFH100028601	A D		C	Sponge cushion		○	○
14	XUPSD30P10000	A A		C	Screw (3 X 10)	(for transformer)	○	○
	0EEGA9900000001	A T		B	AC cord	[AB7]	○	
15	0EEGA040020011	A Z	N	B	AC cord	[AA7]	○	
	0EEGA050010018	A S	N	B	AC cord	[YYC]	○	
16	0EEDG140002018	B A		B	Transformer (230V)		○	
	0EEDG140002000	B A	N	B	Transformer (120V)			○
17	0EEEF070PS1309	A C		C	SL-SW plate		○	○
18	0EEFB1PD051011	A C		C	SL-SW knob		○	○
19	0EEEL6PD052002	A C		C	SL-SW cover M		○	○
20	KI-OB1078CCZZ	B C		E	Printer unit (MFL87)		○	○
21	0EEEL6PD051006	A C		C	SL-SW cover L		○	○
22	0EEFAAPD051020	A U		D	Upper case		○	
	0EEFAAPD051038	A V	N	D	Upper case			○
23	0EEECPD0510209	A H		C	Paper holder unit (L/R pair)		○	○
24	0EEFAFPD051029	A E		D	Printer cover		○	
	0EEFAFPD051011	A G		D	Printer cover			○
25	0EEFD2PD051003	A E		C	Paper cutter		○	○
26	0EEKB1PD053006	A E		C	Key top (GT)		○	○
27	0EEKGPD0510019	A Q		C	Key top(others)		○	○
28	0EEPD05XX0301R	B N		E	PWB unit(with LCD unit)	(include No.29)	○	○
29	0EEPD05XX3200T	B B		E	LCD unit(with H.M.F)		○	○

## 2 Packing material&Accessories

### 3 PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	EL-2195L	EL-2192GI
1	0EEAB832300002	BA		B	LSI (TC83230-0203)	[LSI]	○ ○
2	RR-ZZ1003CCZZ	AB		B	Fuse resistor (1/4W 10Ω ±5%)	[FR]	○ ○
3	VRS-TP2BD104J	AA		C	Resistor (1/8W 100KΩ ±5%)	[R6]	○ ○
4	VRS-TP2BD683J	AB		C	Resistor (1/8W 68KΩ ±5%)	[R7-9]	○ ○
5	VRS-TP2BD103J	AA		C	Resistor (1/8W 10KΩ ±5%)	[R4,5]	○ ○
6	VRS-TP2BD822J	AA		C	Resistor (1/8W 8.2KΩ ±5%)	[R11]	○ ○
7	VRS-TP2BD622J	AA		C	Resistor (1/8W 6.2KΩ ±5%)	[R15]	○ ○
8	VRS-TP2BD102G	AB		C	Resistor (1/8W 1KΩ ±2%)	[R10]	○ ○
9	VRD-HT2EY303J	AA		C	Resistor (1/4W 30KΩ ±5%)	[R14]	○ ○
10	VRD-HT2EY103J	AA		C	Resistor (1/4W 10KΩ ±5%)	[R11,3]	○ ○
11	VRD-HT2EY562J	AA		C	Resistor (1/4W 5.6KΩ ±5%)	[R13]	○ ○
12	VRD-HT2EY222J	AA		C	Resistor (1/4W 2.2KΩ ±5%)	[R2]	○ ○
13	VRD-HT2EY102J	AA		C	Resistor (1/4W 1.0KΩ ±5%)	[R12]	○ ○
14	0EECC5100411T9	AC		C	Resistor (1W 510Ω)	[R16]	○ ○
15	VCEAGU1CW228M	AE		C	Capacitor (16WV 2200μF)	[C1]	○ ○
16	VCEAGU1HW106M	AB		C	Capacitor (50WV 10μF)	[C2,3]	○ ○
17	VCKYTV1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C7]	○ ○
18	VCCCTV1HH331J	AA		C	Capacitor (50WV 330pF)	[C4-6]	○ ○